



\*\*FILE\*\* ID\*\*STRFINDFI

H 8

STF  
1-1

```
1 0001 0 MODULE STR$IND_FIRST ( ! Find first character in or not in set
2 0002 0
3 0003 0 IDENT = '1-002' ! File: STR$IND_FIRST.B32 Edit: RKR1002
4 0004 0
5 0005 0 ) =
6 0006 1 BEGIN
7 0007 1
8 0008 1
9 0009 1 ****
10 0010 1 *
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28 0028 1 *
29 0029 1 *
30 0030 1 ****
31 0031 1
32 0032 1
33 0033 1 ++
34 0034 1 FACILITY: String support library
35 0035 1
36 0036 1 ABSTRACT: This module contains procedures to find the first character
37 0037 1 in a set or not in a set.
38 0038 1
39 0039 1 ENVIRONMENT: User mode, AST reentrant
40 0040 1
41 0041 1 AUTHOR: R. Reichert, CREATION DATE: 20-July-1982
42 0042 1
43 0043 1 MODIFIED BY:
44 0044 1
45 0045 1 1-001 - Original. RKR 19-APR-1982.
46 0046 1 1-002 - Code improvements. RKR 24-Nov-1982.
47 0047 1 --
48 0048 1 <BLF/PAGE>
```

```
50      0049 1 ! SWITCHES:  
51      0050 1 !  
52      0051 1 !  
53      0052 1 !  
54      0053 1 ! SWITCHES ADDRESSING MODE  
55      0054 1 ! (EXTERNAL = GENERAL, NONEXTERNAL = WORD_RELATIVE);  
56      0055 1 !  
57      0056 1 !  
58      0057 1 ! LINKAGES  
59      0058 1 !  
60      0059 1 ! REQUIRE 'RTLIN:STRLINK'; ! Linkage to STR$ANALYZE_SDESC_R1  
61      0244 1 !  
62      0245 1 ! TABLE OF CONTENTS:  
63      0246 1 !  
64      0247 1 !  
65      0248 1 ! FORWARD ROUTINE  
66      0249 1 ! STR$IND_FIRST_IN_SET, ! Find first occurrence of character  
67      0250 1 ! in a set of characters  
68      0251 1 ! STR$IND_FIRST_NOT_IN_SET ; ! Find first occurrence of a character  
69      0252 1 ! not in a set of characters.  
70      0253 1 !  
71      0254 1 !  
72      0255 1 ! INCLUDE FILES:  
73      0256 1 !  
74      0257 1 !  
75      0258 1 ! REQUIRE 'RTLIN:RTLPSECT'; ! Declare PSECTS code  
76      0353 1 ! REQUIRE 'RTLIN:STRMACROS'; ! use string macros to write code  
77      1269 1 ! LIBRARY 'RTLSTARLE'; ! STARLET library for macros and symbols  
78      1270 1 !  
79      1271 1 !  
80      1272 1 ! MACROS: NONE  
81      1273 1 !  
82      1274 1 !  
83      1275 1 !  
84      1276 1 ! EQUATED SYMBOLS: NONE  
85      1277 1 !  
86      1278 1 !  
87      1279 1 !  
88      1280 1 ! PSEC DECLARATIONS  
89      1281 1 !  
90      1282 1 !  
91      1283 1 ! DECLARE_PSECTS (STR);  
92      1284 1 !  
93      1285 1 !  
94      1286 1 ! OWN STORAGE: NONE  
95      1287 1 !  
96      1288 1 !  
97      1289 1 !  
98      1290 1 ! EXTERNAL REFERENCES  
99      1291 1 !  
100     1292 1 !     NONE
```

102 1293 1 GLOBAL ROUTINE STR\$IND\_FIRST\_IN\_SET ( ! find first character in string  
103 1294 1 ! that occurs in set  
104 1295 1 STRING, ! pointer to string descriptor  
105 1296 1 SET\_OF\_CHARS ! pointer to string descriptor which contains  
106 1297 1 ! set of characters  
107 1298 1 ) : =  
108 1299 1 !++  
109 1300 1 ! FUNCTIONAL DESCRIPTION:  
110 1301 1  
111 1302 1  
112 1303 1 This routine searches STRING character by character, left to  
113 1304 1 right, comparing each character selected to every character in  
114 1305 1 SET\_OF\_CHARS. When a match is found, the process stops and  
115 1306 1 INDEX is set to the position in STRING where the match was  
116 1307 1 found. If no match is found, 0 is returned.  
117 1308 1 If either STRING or SET\_OF\_CHARS is of zero length, index  
118 1309 1 returned will be 0.  
119 1310 1  
120 1311 1 CALLING SEQUENCE:  
121 1312 1  
122 1313 1 INDEX.wl.v = STR\$IND\_FIRST\_IN\_SET ( STRING1.rt.dx,  
123 1314 1 SET\_OF\_CHARS.rt.dx )  
124 1315 1  
125 1316 1 FORMAL PARAMETERS:  
126 1317 1  
127 1318 1 STRING1.rt.dx pointer to string descriptor  
128 1319 1  
129 1320 1 SET\_OF\_CHARS.rt.dx pointer to a string of characters which  
130 1321 1 constitutes the set of characters of  
131 1322 1 interest.  
132 1323 1  
133 1324 1 IMPLICIT INPUTS:  
134 1325 1  
135 1326 1  
136 1327 1  
137 1328 1 IMPLICIT OUTPUTS:  
138 1329 1  
139 1330 1  
140 1331 1  
141 1332 1 ROUTINE VALUE:  
142 1333 1  
143 1334 1 INDEX.wl.v Position in STRING where a match was  
144 1335 1 found, else 0.  
145 1336 1  
146 1337 1 SIDE EFFECTS:  
147 1338 1  
148 1339 1 May signal STR\$\_ILLSTRCLA on bad string class  
149 1340 1  
150 1341 1 --  
151 1342 2 BEGIN  
152 1343 2  
153 1344 2 MAP STRING : REF BLOCK [ ,BYTE ];  
154 1345 2 SET\_OF\_CHARS : REF BLOCK [ ,BYTE ];  
155 1346 2  
156 1347 2 BUILTIN  
157 1348 2 SCANC;  
158 1349 2

```

159      1350 2 LOCAL
160      1351 2   ONE : INITIAL (1),      ! Constant
161      1352 2   BYTES_REMAINING,    ! After SCANC
162      1353 2   MATCH_BYTE,       ! After SCANC
163      1354 2   SCAN_TABLE : VECTOR [256, BYTE], ! Table for SCANC operation
164      1355 2   STR_LEN : WORD,      length of STRING
165      1356 2   STR_ADDR,        address of string
166      1357 2   SET_LEN : WORD,      length of SET_OF_CHARS
167      1358 2   SET_ADDR : REF VECTOR [, BYTE]; ! address of SET_OF_CHARS
168
169      1360 2 !+
170      1361 2 !- Initialize SCAN_TABLE to zeroes.
171      1362 2 !- CH$FILL (0, 256, SCAN_TABLE);
172
173      1363 2 !+
174      1364 2 !- Extract the length and starting address of STRING and SET_OF_CHARS.
175      1365 2 !- Special-case zero length strings.
176      1366 2 !+
177      1367 2 !- $STR$GET_LEN_ADDR ( STRING, STR_LEN, STR_ADDR );
178      1368 2 !- $STR$GET_LEN_ADDR ( SET_OF_CHARS, SET_LEN, SET_ADDR ) ;
179
180      1369 2 !+
181      1370 2 !- IF .STR_LEN EQ 0 OR
182      1371 2 !- .SET_LEN EQ 0           THEN RETURN 0 ;
183
184      1372 2 !+
185      1373 2 !- Set a 1 bit in each character position in SCAN_TABLE that corresponds
186      1374 2 !- to a character in SET_OF_CHARS.
187      1375 2 !+
188      1376 2 !- DECR I FROM .SET_LEN - 1 TO 0
189      1377 2 !- DO
190      1378 2 !-   SCAN_TABLE [ .SET_ADDR [ .I ] ] = 1 ;
191
192      1379 2 !+
193      1380 2 !- Find out if one of the characters in SET_OF_CHARS appears in
194      1381 2 !- STRING.
195      1382 2 !+
196      1383 2 !- SCANC ( STR_LEN, .STR_ADDR, SCAN_TABLE, ONE : BYTES_REMAINING,
197      1384 2 !-                         MATCH_BYTE );
198
199      1385 2 !+
200      1386 2 !- IF .BYTES_REMAINING NEQ 0 ! If scanc ran off end of string
201      1387 2 !- THEN
202      1388 2 !-   RETURN (.MATCH_BYTE - .STR_ADDR + 1);
203      1389 2 !+
204      1390 2 !- RETURN 0;
205      1391 2 !+
206      1392 2 !- END :           ! Procedure STR$IND_FIRST_IN_SET

```

```

.TITLE STR$IND_FIRST
.IDENT \1-002\

.EXTRN STR$ANALYZE_SDESC_R1
.PSECT _STR$CODE,NOWRT, SHR, PIC,2
.ENTRY STR$IND_FIRST_IN_SET, Save R2,R3,R4,R5,R6,-; 1293
MOVAB R7,STR$ANALYZE_SDESC_R1, R7

```

00FC 00000  
57 0000000G 00 9E 00002

0100	8F	00	5E	FF00	CE 9E 00009	MOVAB -256(SP), SP	1342	:
			56	01	D0 0000E	MOVL #1, ONE	1363	:
			6E	00	2C 00011	MOVCS #0, (SP), #0, #256, SCAN_TABLE		
			6E	00	OC018			
			50	04	AC D0 00019	MOVL STRING, R0	1369	
			02	03	A0 91 00010	CMPB 3(R0), #2		
				09	1A 00021	BGTRU 1\$		
			53	60	B0 00023	MOVW (R0), STR_LEN		
			54	04	A0 D0 00026	MOVL 4(R0), STR_ADDR		
				05	11 0002A	BRB 2\$		
				67	16 0002C	JSB STR\$ANALYZE_SDESC_R1		
			53	50	7D 0002E	MOVQ R0, STR_LEN		
			50	08	AC D0 00031	MOVL SET_OF_CHARS, R0	1370	
			02	03	A0 91 00035	CMPB 3(R0), #2		
				09	1A 00039	BGTRU 3\$		
			52	60	B0 0003B	MOVW (R0), SET_LEN		
			51	04	A0 D0 0003E	MOVL 4(R0), SET_ADDR		
				05	11 00042	BRB 4\$		
				67	16 00044	JSB STR\$ANALYZE_SDESC_R1		
			52	50	D0 00046	MOVL R0, SET_LEN		
				53	B5 00049	TSTW STR_LEN	1372	
				26	13 0004B	BEQL 7\$		
				52	B5 0004D	TSTW SET_LEN	1373	
				22	13 0004F	BEQL 7\$		
			52	52	3C 00051	MOVZWL SET_LEN, I	1381	
				08	11 00054	BRB 6\$		
			50	6241	9A 00056	MOVZBL (I)[SET_ADDR], R0		
			6E40	01	90 0005A	MOVB #1, SCAN_TABLE[R0]		
			F5	52	F4 0005E	S0BGEQ I, 5\$		
				53	2A 00061	SCANC STR_LEN, (STR_ADDR), SCAN_TABLE, ONE	1386	
				50	D5 00066	TSTL BYTES_REMAINING	1389	
			51	09	13 00068	BEQL 7\$		
			51	54	C2 0006A	SUBL2 STR_ADDR, R1	1391	
			50	51	D6 0006D	INCL R1		
				51	D0 0006F	MOVL R1, R0		
				04	00072	RET		
				50	D4 00073	CLRL R0	1394	
				04	00075	RET		

: Routine Size: 118 bytes, Routine Base: \_STR\$CODE + 0000

S  
R  
E  
L  
M  
C

```
205      1395 1 GLOBAL ROUTINE STR$IND_FIRST_NOT_IN_SET ( ! Find first character in
206      1396 1                                string that does not occur
207      1397 1                                in set
208      1398 1      STRING, ! pointer to string descriptor
209      1399 1      SET_OF_CHARS ! pointer to string descriptor which contains
210      1400 1                                set of characters
211      1401 1
212      1402 1      ) : =
213      1403 1      ++
214      1404 1      FUNCTIONAL DESCRIPTION:
215      1405 1
216      1406 1      This routine searches STRING character by character, left to
217      1407 1      right, comparing each character selected to every character in
218      1408 1      SET_OF_CHARS. When a selected character is not found in
219      1409 1      SET_OF_CHARS, the process stops and INDEX is set to the position
220      1410 1      in STRING where the non-match was found. If all characters in
221      1411 1      STRING match some character in SET_OF_CHARS, 0 is returned.
222      1412 1
223      1413 1      If STRING is if zero length, index will be 1 since anything
224      1414 1      in set (particularly 1st element) will not be found in STRING.
225      1415 1      If length of SET_OF_CHARS is zero, index will be zero since
226      1416 1      'nothing' can always be found in STRING.
227      1417 1
228      1418 1      CALLING SEQUENCE:
229      1419 1
230      1420 1      INDEX.wl.v = STR$IND_FIRST_NOT_IN_SET ( STRING.rt.dx,
231      1421 1                                SET_OF_CHARS.rt.dx )
232      1422 1
233      1423 1      FORMAL PARAMETERS:
234      1424 1
235      1425 1      STRING.rt.dx          pointer to string descriptor
236      1426 1
237      1427 1      SET_OF_CHARS.rt.dx    pointer to a string of characters which
238      1428 1                                constitutes the set of characters of
239      1429 1                                interest.
240      1430 1
241      1431 1      IMPLICIT INPUTS:
242      1432 1
243      1433 1      NONE
244      1434 1
245      1435 1      IMPLICIT OUTPUTS:
246      1436 1
247      1437 1
248      1438 1
249      1439 1
250      1440 1      ROUTINE VALUE:
251      1441 1      INDEX.wl.v          Position in STRING where a non-match was
252      1442 1                                found, else 0.
253      1443 1
254      1444 1      SIDE EFFECTS:
255      1445 1
256      1446 1      May signal STR$_ILLSTRCLA on bad string class
257      1447 1
258      1448 1      !-- BEGIN
259      1449 2
260      1450 2      MAP STRING      : REF BLOCK [ ,BYTE ],
```

```
262      1452 2      SET_OF_CHARS : REF BLOCK [ ,BYTE ];
263      1453 2
264      1454 2      BUILTIN
265      1455 2      SPANC;
266
267      1457 2      LOCAL
268      1458 2      ONE : INITIAL (1),          ! Constant
269      1459 2      BYTES_REMAINING,        ! After SPANC
270      1460 2      NON_MATCH_BYTE,        ! After SPANC
271      1461 2      SPAN_TABLE : VECTOR [256, BYTE], ! Table for SPANC operation
272      1462 2      STR_LEN : WORD,          ! length of STRING
273      1463 2      STR_ADDR : WORD,          ! address of string
274      1464 2      SET_LEN : WORD,          ! length of SET_OF_CHARS
275      1465 2      SET_ADDR : REF VECTOR [,BYTE]; ! address of SET_OF_CHARS
276
277      1467 2      !+
278      1468 2      ! Initialize SPAN_TABLE to zeroes.
279      1469 2      !-
280      1470 2      CH$FILL (0, 256, SPAN_TABLE);
281
282      1472 2      !+
283      1473 2      ! Extract the length and starting address of STRING and SET_OF_CHARS.
284      1474 2      ! Special case zero length strings.
285      1475 2      !-
286      1476 2      $STR$GET_LEN_ADDR ( STRING, STR_LEN, STR_ADDR );
287      1477 2      $STR$GET_LEN_ADDR ( SET_OF_CHARS, SET_LEN, SET_ADDR ) ;
288
289      1479 2      IF .SET_LEN EQ 0 THEN RETURN 0 ;
290      1480 2      IF .STR_LEN EQ 0 THEN RETURN 1 ;
291
292      1482 2      !+
293      1483 2      ! Set a 1 bit in each character position in SPAN_TABLE that corresponds
294      1484 2      ! to a character in SET_OF_CHARS.
295      1485 2      !-
296      1486 2      DECR I FROM .SET_LEN - 1 TO 0
297      1487 2      DO
298      1488 2      SPAN_TABLE [ .SET_ADDR [ .I ] ] = 1 ;
299
300      1489 2      !+
301      1490 2      ! Find out if one of the characters in SET_OF_CHARS does not appear in
302      1491 2      ! STRING.
303      1492 2      !-
304      1493 2      SPANC ( STR_LEN, .STR_ADDR, SPAN_TABLE, ONE : BYTES_REMAINING,
305      1494 2      !           NON_MATCH_BYTE );
306
307      1496 2      IF .BYTES_REMAINING NEQ 0 ! If span ran off end of string
308      1497 2      THEN
309      1498 2      RETURN (.NON_MATCH_BYTE - .STR_ADDR + 1);
310
311      1500 2      RETURN 0;
1501 1      ! Procedure STR$IND_FIRST_NOT_IN_SET
END ;
```

00FC 00000

.ENTRY STR\$IND\_FIRST\_NOT\_IN\_SET, Save R2,R3,R4,- : 1395  
R5,R6,R7

0100	8F	00	57 00000000G	00 9E 00002	MOVAB	STR\$ANALYZE_SDESC_R1, R7	1449
			5E FF00	CE 9E 00009	MOVAB	-256(SP), SP	1450
			56 01	00 D0 0000E	MOVL	#1, ONE	1451
			6E 00	2C 00011	MOVCS	#0, (SP), #0, #256, SPAN_TABLE	1452
			6E 6E	00 00018			1453
			50 02	04 AC D0 00019	MOVL	STRING, R0	1454
			03 A0 91 0001D	CMPB	3(R0), #2	1455	
			09 09	1A 00021	BGTRU	1\$	1456
			53 60	B0 00023	MOVW	(R0), STR_LEN	1457
			54 54	04 A0 D0 00026	MOVL	4(R0), STR_ADDR	1458
			05 05	11 0002A	BRB	2\$	1459
			67 67	16 0002C	JSB	STR\$ANALYZE_SDESC_R1	1460
			50 50	7D 0002E	MOVQ	RO, STR_LEN	1461
			08 50	D0 00031	MOVL	SET_OF_CHARS, RO	1462
			03 02	A0 91 00035	CMPB	3(R0), #2	1463
			09 09	1A 00039	BGTRU	3\$	1464
			52 52	60 B0 0003B	MOVW	(R0), SET_LEN	1465
			51 51	D0 0003E	MOVL	4(R0), SET_ADDR	1466
			05 05	11 00042	BRB	4\$	1467
			67 67	16 00044	JSB	STR\$ANALYZE_SDESC_R1	1468
			50 50	D0 00046	MOVL	RO, SET_LEN	1469
			52 52	B5 00049	TSTW	SET_LEN	1470
			2A 52	13 0004B	BEQL	8\$	1471
			53 53	B5 0004D	TSTW	STR_LEN	1472
			04 04	12 0004F	BNEQ	5\$	1473
			50 50	D0 00051	MOVL	#1, RO	1474
			01 01	04 00054	RET		1475
			52 52	3C 00055	MOVZWL	SET_LEN, I	1476
			08 08	11 00058	BRB	7\$	1477
			50 62	41 9A 0005A	MOVZBL	(I)[SET_ADDR], RO	1478
			40 01	90 0005E	MOVB	#1, SPAN_TABLE[RO]	1479
			F5 52	F4 00062	SOBGEQ	I, 6\$	1480
			64 53	2B 00065	SPANC	STR_LEN, (STR_ADDR), SPAN_TABLE, ONE	1481
			6E 50	D5 0006A	TSTL	BYTES_REMAINING	1482
			40 09	13 0006C	BEQL	8\$	1483
			51 51	C2 0006E	SUBL2	STR_ADDR, R1	1484
			51 51	D6 00071	INCL	R1	1485
			50 51	D0 00073	MOVL	R1, RO	1486
			04 04	00076	RET		1487
			50 50	D4 00077	CLRL	RO	1488
			04 04	00079	RET		1489

; Routine Size: 122 bytes, Routine Base: \_STR\$CODE + 0076

STR\$IND\_FIRST  
1-002

D 9  
16-Sep-1984 01:38:01  
14-Sep-1984 12:40:06  
VAX-11 Bliss-32 V4.0-742  
[LIBRTL.SRC]STRFINDFI.B32;1

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(5)

: 313 1502 1 END  
: 314 1503 0 ELUDOM

!End of module

STI  
1-(

PSECT SUMMARY

Name	Bytes	Attributes
_STR\$CODE	240	NOVEC,NOWRT, RD , EXE, SHR, LCL, REL, CON, PIC,ALIGN(2)

Library Statistics

File	-----	Symbols	-----	Pages	Processing
	Total	Loaded	Percent	Mapped	Time
\$_255\$DUA28:[SYSLIB]STARLET.L32;1	9776	4	0	581	00:00.7

COMMAND QUALIFIERS

BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/NOTRACE/LIS=LISS:STRFINDFI/OBJ=OBJ\$:STRFINDFI MSRC\$:STRFINDFI/UPDATE=(ENH\$:STRFINDFI)

: Size: 240 code + 0 data bytes  
: Run Time: 00:06.9  
: Elapsed Time: 00:28.8  
: Lines/CPU Min: 12994  
: Lexemes/CPU-Min: 33873  
: Memory Used: 88 pages  
: Compilation Complete

0214 AH-BT13A-SE  
VAX/VMS V4.0

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LIS

STRLEFT  
LIS

STRMULTI  
LIS

STRCOMEQ  
LIS

STRCONCAT  
LIS

STRGETFRE  
LIS

STRMOUD  
LIS